

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

**PATENT NO.** : 6,766,230 B1  
**DATED** : July 20, 2004  
**INVENTOR(S)** : Rizzoni et al.

Page 1 of 4

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 3,

Line 53, please delete "testing" and insert -- testing, --.

Column 4,

Lines 14-18, please delete " $u_{oi}, i = 1..m$  are the input vectors" and insert  
 $\Delta u_i, i = 1..m$  are the input fault vectors  
 $\theta_{oi}, i = 1..m$  are the nominal parameter vectors  
 $\Delta \theta_i, i = 1..m$  are the parameter fault vectors  
 $x_i, i = 1..m$  are the state vectors"

--  $u_{di}, i = 1..m$  are the input vectors  
 $\Delta u_{di}, i = 1..m$  are the input fault vectors  
 $\theta_{ci}, i = 1..m$  are the nominal parameter vectors  
 $\Delta \theta_{ci}, i = 1..m$  are the parameter fault vectors  
 $x_i, i = 1..m$  are the state vectors --.

**Lines 24-29, please delete**

88

$$\begin{cases} x_i = f_i(x_i, u_i, \theta_i) \\ y = h_i(x_i, u_i, \theta_i) + \Delta y, \quad x_i \in \Gamma_i \\ \vdots \\ x_m = f_m(x_m, u_m, \theta_m) \\ y = h_m(x_m, u_m, \theta_m) + \Delta y, \quad x_m \in \Gamma_m \end{cases} \quad (1)$$

and insert

—

$$\begin{cases} x_1 = f_1(x_1, u_1, \theta_1) \\ y = h_1(x_1, u_1, \theta_1) + \Delta y, \quad x_1 \in \Gamma_1 \\ \vdots \\ x_m = f_m(x_m, u_m, \theta_m) \\ y = h_m(x_m, u_m, \theta_m) + \Delta y, \quad x_m \in \Gamma_m \end{cases} \quad (1)$$

Line 31, please delete " $u_{o_i} = u_{o_i} + \Delta u_i, \theta_i = \theta_{o_i} + \Delta \theta_i, i = 1..m$ " and insert --  $u_{o_i} = u_{o_i} + \Delta u_i, \theta_i = \theta_{o_i} + \Delta \theta_i, i = 1..m$  --.

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Page 2 of 4

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 4 (cont'd),

Lines 37-44, please delete

$$\begin{array}{l} \text{" } \left\{ \begin{array}{l} \hat{x}_i = g_i(\hat{x}_i, u_i, \hat{\theta}_i, y) \\ \hat{y}_i = h_i(\hat{x}_i, u_i, \hat{\theta}_i) \end{array} \right. , \hat{x}_i \in \Gamma_i \\ \vdots \\ \left\{ \begin{array}{l} \hat{x}_m = g_m(\hat{x}_m, u_m, \hat{\theta}_m, y) \\ \hat{y}_m = h_m(\hat{x}_m, u_m, \hat{\theta}_m) \end{array} \right. , \hat{x}_m \in \Gamma_m \end{array} \quad (2) \text{"}$$

and insert

$$\begin{array}{l} \left\{ \begin{array}{l} \hat{x}_i = g_i(\hat{x}_i, u_i, \hat{\theta}_i, y) \\ \hat{y}_i = h_i(\hat{x}_i, u_i, \hat{\theta}_i) \end{array} \right. , \hat{x}_i \in \Gamma_i \\ \vdots \\ \left\{ \begin{array}{l} \hat{x}_m = g_m(\hat{x}_m, u_m, \hat{\theta}_m, y) \\ \hat{y}_m = h_m(\hat{x}_m, u_m, \hat{\theta}_m) \end{array} \right. , \hat{x}_m \in \Gamma_m \end{array} \quad (2)$$

Line 48, please delete "  $\hat{x}_i \rightarrow x_i$  for  $i \rightarrow \infty, i=1 \dots n$  " (3)

and insert  $\hat{x}_i \rightarrow x_i$  for  $i \rightarrow \infty, i=1 \dots n$  (3)

Column 5,

Line 41, please delete " $a_{lat} \leq 0.2g$ " and insert --  $a_{lat} \leq 0.2g$  --.

Lines 45-50, please delete

$$\begin{array}{l} \text{" } \left\{ \begin{array}{l} v_x = \frac{F_x}{M} + v_y \psi \\ v_y = -\frac{2}{M}(C_f + C_r) \frac{v_y}{v_x} - \frac{2}{M}(aC_f - bC_r) \frac{\psi}{v_x} - v_x \psi + \frac{2C_f}{MG} \delta \\ \psi = -\frac{2}{7}(aC_f - bC_r) \frac{v_y}{v_x} - \frac{2}{7}(a^2 C_f + b^2 C_r) \frac{\psi}{v_x} + \frac{2aC_f}{7G} \delta \end{array} \right. \quad (4) \text{"}$$

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Page 3 of 4

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Column 5 (cont'd),  
 and insert

$$\begin{cases} \dot{v}_x = \frac{F_x}{M} + v_y \dot{\psi} \\ \dot{v}_y = -\frac{2}{M} (C_f + C_r) \frac{v_x}{v_r} - \frac{2}{M} (a C_f - b C_r) \frac{\dot{\psi}}{v_r} - v_x \dot{\psi} + \frac{2 C_f}{M \delta} \delta \\ \dot{\psi} = -\frac{2}{J} (a C_f - b C_r) \frac{v_x}{v_r} - \frac{2}{J} (a^2 C_f + b^2 C_r) \frac{\dot{\psi}}{v_r} + \frac{2 a C_f}{J \delta} \delta \end{cases} \quad (4) \text{ --}$$

Column 6,  
 Lines 2-16, please delete

$$\dot{\hat{x}} = \left( \frac{\partial H(\hat{x})}{\partial \hat{x}} \right)^{-1} M(\hat{x}) \text{sign}(V(t) - H(\hat{x})) + B \delta \quad (5) \text{ --}$$

where

$$\begin{aligned} H(\hat{x}) &= [h_1(\hat{x}) \ h_2(\hat{x}) \ h_3(\hat{x})] \\ h_1(\hat{x}) &= \dot{\psi} = r \\ h_2(\hat{x}) &= \dot{r} \\ h_3(\hat{x}) &= \dot{r} \\ \gamma(t) &= [v_1(t) \ v_2(t) \ v_3(t)] \\ v_i(t) &= r(t) \\ v_{i+1} &= (m_i(\hat{x}) \text{sign}(x(v_i(t) - h_i(\hat{x}(t))))_{eq}, \quad i=1,2 \\ M(\hat{x}) &= \text{diag} (m_1(\hat{x}) \ m_2(\hat{x}) \ m_3(\hat{x})) \end{aligned}$$

and insert

$$\dot{\hat{x}} = \left( \frac{\partial H(\hat{x})}{\partial \hat{x}} \right)^{-1} M(\hat{x}) \text{sign}(V(t) - H(\hat{x})) + B \delta \quad (5)$$

where

$$\begin{aligned} H(\hat{x}) &= [h_1(\hat{x}) \ h_2(\hat{x}) \ h_3(\hat{x})] \\ h_1(\hat{x}) &= \dot{\psi} = r \\ h_2(\hat{x}) &= \dot{r} \\ h_3(\hat{x}) &= \dot{r} \\ V(t) &= [v_1(t) \ v_2(t) \ v_3(t)] \\ v_i(t) &= r(t) \\ v_{i+1} &= (m_i(\hat{x}) \text{sign}(x(v_i(t) - h_i(\hat{x}(t))))_{eq}, \quad i=1,2 \\ M(\hat{x}) &= \text{diag} (m_1(\hat{x}) \ m_2(\hat{x}) \ m_3(\hat{x})) \quad \text{--} \end{aligned}$$

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Page 4 of 4

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Column 6 (cont'd),

Line 33, please delete "  $R = [a_{1a} - a_{y1} \delta - \delta a_{1a} - a_{y2} C_f - \hat{C}_f a_{1a} - a_{y3} C_r - \hat{C}_r]$  (6) "

and insert --  $R = [a_{1a} - a_{y1} \delta - \delta a_{1a} - a_{y2} C_f - \hat{C}_f a_{1a} - a_{y3} C_r - \hat{C}_r]$  (6) --.

Column 8,

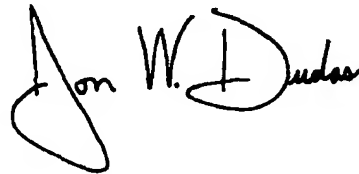
Line 42, please delete "said-residual," and insert -- said residual --.

Column 10,

Line 20, please delete "generator a" and insert -- generator, a --.

Signed and Sealed this

Thirtieth Day of August, 2005



JON W. DUDAS  
*Director of the United States Patent and Trademark Office*